

U.S.C.G. Merchant Marine Exam
Mobile Offshore Drilling Units
Q441 Ballast Control Operator Operations
(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. The COASTAL DRILLER is loaded as shown in the Sample Load Form #2 (Preload). What will be the LCG if the preload is dumped?
- (A) 118.51 feet AFO
 - (B) 119.44 feet AFO
 - (C) 120.62 feet AFO
 - (D) 121.53 feet AFO

If choice B is selected set score to 1.

2. Lowering the hull of the COASTAL DRILLER and refloating should be done in favorable weather conditions with wave heights not more than _____.
- (A) four feet
 - (B) three feet
 - (C) five feet
 - (D) six feet

If choice C is selected set score to 1.

3. The DEEP DRILLER is loaded as shown in the Sample Load Form #5 (Survival), when an unexpected, slowly increasing port list and bow down trim occurs. A leak in C1P is found. By deballasting from ballast tanks 2P and 3P, the inclination slowly decreases. The increase in the longitudinal free surface correction is _____.
- (A) 0.90 foot
 - (B) 0.83 foot
 - (C) 0.57 foot
 - (D) 0.49 foot

If choice D is selected set score to 1.

4. How many independent bilge systems is the COASTAL DRILLER equipped with?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4

If choice B is selected set score to 1.

5. The storage device for nitrogen-pressurized hydraulic fluid, which is used in closing the blowout preventers is called the _____.

- (A) accumulator
- (B) actuator
- (C) annular preventer
- (D) annulus

If choice A is selected set score to 1.

6. The height of the transverse metacenter for a MODU is 62.44 feet. The height of the center of gravity is 56.10 feet, and the transverse free surface correction is 1.21 feet. What is the value of the metacentric height corrected for transverse free surface effects?

- (A) 5.13 feet
- (B) 6.34 feet
- (C) 8.76 feet
- (D) 12.10 feet

If choice A is selected set score to 1.

7. If the result of loading a MODU is an increase in the height of the center of gravity, there will always be an increase in the _____.

- (A) metacentric height
- (B) vertical moments
- (C) righting moment
- (D) righting arm

If choice B is selected set score to 1.

8. On board a mobile offshore drilling unit, the key to the most rapid and effective response to a man overboard situation is _____.

- (A) good equipment
- (B) a dedicated crew
- (C) good communication
- (D) well-conducted drills

If choice D is selected set score to 1.

9. If you must abandon a rig in VERY HEAVY SEAS, in a survival craft, when should you remove the safety pin and pull the hook release?

- (A) Only when waterborne
- (B) Immediately upon launching
- (C) One to three feet before first wave contact
- (D) Upon first wave contact

If choice B is selected set score to 1.

10. Reinforcing frames attached to a bulkhead on a MODU are called _____.

- (A) side longitudinals
- (B) stiffeners
- (C) intercostals
- (D) brackets

If choice B is selected set score to 1.

11. When two ballast pumps used for deballasting a single tank start cavitating, you should _____.

- (A) close the valve on the suction side of the ballast pump to re-prime the pump
- (B) open all valves on the discharge side to permit improved flow
- (C) shut down one pump
- (D) close the valve on the discharge side of the pump to re-acquire suction

If choice C is selected set score to 1.

12. Bulkheads which form part of the tanks on a MODU are stiffened to withstand _____.

- (A) hydrostatic pressure
- (B) deck loads from above
- (C) dynamic forces while afloat
- (D) over-pressurization

If choice A is selected set score to 1.

13. The COASTAL DRILLER has a change of trim by the head of 2.0 feet. What is the change of draft at the forward draft marks?

- (A) 0.66 feet
- (B) 1.00 feet
- (C) 1.33 feet
- (D) 2.00 feet

If choice C is selected set score to 1.

14. After jacking down your liftboat you have an unexpected list. You find that the only cause of this list must be a flooded leg. Raising the flooded leg further would adversely affect the boats stability by _____.

- (A) increasing GM and causing a fast roll
- (B) increasing the righting arm on the high side
- (C) causing the vessel to yaw when underway
- (D) raising the KG and increasing the draft which may put you in an unsafe operating condition

If choice D is selected set score to 1.

15. Among the valves on the DEEP DRILLER which may be opened when using the Salt-Water Service Pump to pump water into Tank 1P is _____.

- (A) 33
- (B) 36
- (C) 46
- (D) 48

If choice C is selected set score to 1.

16. Sea water temporarily pumped into tanks to simulate the increased vertical loading of environmental forces is termed _____.

- (A) preload
- (B) basic load
- (C) liquid variable load
- (D) fixed load

If choice A is selected set score to 1.

17. What is the decrease in vertical moments for the Coastal Driller if 2.5 feet of drill water is discharged from a full drill water tank #23?

- (A) 3,464 ft-kips
- (B) 2,982 ft-kips
- (C) 482 ft-kips
- (D) 161 ft-kips

If choice C is selected set score to 1.

18. In the DEEP DRILLER, the transverse free surface correction (FSCT) is obtained from the total of transverse free surface moments (FSMT) by _____.

- (A) multiplying by displacement
- (B) dividing by displacement
- (C) subtracting the TCG
- (D) adding the TCG

If choice B is selected set score to 1.

19. The order of importance in addressing damage control on a MODU is _____.

- (A) control flooding, control fire, repair structural damage
- (B) restore vital services, control fire, control flooding
- (C) control fire, control flooding, repair structural damage
- (D) control fire, restore vital services, control flooding

If choice C is selected set score to 1.

20. The best information on the nature and extent of damage on a MODU is obtained from _____.

- (A) the toolpusher
- (B) personnel at the scene of the damage
- (C) person in charge of the affected spaces
- (D) alarms and monitoring devices

If choice B is selected set score to 1.

21. When the ullage is 5.7 feet in P-Tank #6 for the Deep Driller, the transverse moment for P-Tank #6 is _____.

- (A) 1,288 foot-tons
- (B) 1,887 foot-tons
- (C) 3,169 foot-tons
- (D) 4,596 foot-tons

If choice B is selected set score to 1.

22. The DEEP DRILLER is loaded as shown in Sample Load Form #4 (Drilling). While the unit is deballasting, starboard valve 19 fails in the closed position. You may deballast from tank 9S by pumping from tank 8S by opening valves 20 and _____.

- (A) 35
- (B) 21
- (C) 18
- (D) 17

If choice C is selected set score to 1.

23. A jack-up 210 feet in length is level during transit. The LCF is 140 feet aft of the bow. How much weight should be applied at the stern to re-level the jack-up if 75 kips is applied at the bow?

- (A) 50 kips
- (B) 75 kips
- (C) 100 kips
- (D) 150 kips

If choice D is selected set score to 1.

24. On the DEEP DRILLER, among the starboard-side valves to open when deballasting from ballast tank 8S is valve _____.

- (A) 7
- (B) 8
- (C) 17
- (D) 18

If choice C is selected set score to 1.

25. The draft of the DEEP DRILLER in the lightweight condition is _____.

- (A) 16.19 feet
- (B) 17.71 feet
- (C) 17.96 feet
- (D) 18.35 feet

If choice A is selected set score to 1.

26. The maximum transverse extension of the cantilever for the COASTAL DRILLER places the rotary _____.

- (A) 40 feet aft of the transom
- (B) at the leg centroid
- (C) at the vessel TCG
- (D) within 10 feet of the centerline

If choice D is selected set score to 1.

27. The center of flotation for the COASTAL DRILLER is located at the geometric center of the _____.

- (A) underwater volume
- (B) amidships section
- (C) above water volume
- (D) waterplane area

If choice D is selected set score to 1.

28. For the DEEP DRILLER, it is recommended that the number of lower-hull ballast tanks with free surfaces be less than _____.

- (A) 2
- (B) 4
- (C) 6
- (D) 8

If choice C is selected set score to 1.

29. For the DEEP DRILLER, What are the vertical moments for a sounding of 10 feet in tank C3P?

- (A) 1,055 foot-tons
- (B) 4,754 foot-tons
- (C) 14,621 foot-tons
- (D) 17,113 foot-tons

If choice B is selected set score to 1.

30. When the height of the metacenter has the same value as the height of the center of gravity, the metacentric height is equal to _____.

- (A) the height of the center of gravity
- (B) the height of the metacenter
- (C) zero
- (D) the same as half the height of the metacenter

If choice C is selected set score to 1.

31. In a severe storm while elevated, the drilling loads on the COASTAL DRILLER must be considered as _____.

- (A) setback loads
- (B) hook loads
- (C) variable loads
- (D) rotary loads

If choice C is selected set score to 1.

32. The effect of ocean currents is usually more evident on a rig being towed than on a tug navigating independently because the _____.

- (A) current will offset the rig
- (B) current causes yawing
- (C) speed of the tow is less
- (D) tow line catches the current

If choice C is selected set score to 1.

33. On the COASTAL DRILLER, the start/stop station for the bilge pumps is located _____.

- (A) in the OIM's office
- (B) near the bilge pits
- (C) in the control house
- (D) in the MCC

If choice B is selected set score to 1.

34. The COASTAL DRILLER is loaded as shown in the Sample Load Form #1 (Rig Move). What is the new Longitudinal Free Surface Correction (FSCL) if the entire contents of drill water tanks 6 and 7 are discharged?

- (A) 2.24 feet
- (B) 2.14 feet
- (C) 2.10 feet
- (D) 1.63 feet

If choice D is selected set score to 1.

35. What danger is presented if a waterspout passes over a MODU?

- (A) Visibility could be restricted by low clouds.
- (B) Heavy rains could cause downflooding.
- (C) Personnel may be injured by loose deck gear blown by the wind.
- (D) Large waves could cause structural damage.

If choice C is selected set score to 1.

36. A weight of 1,000 kips is equivalent to _____.

- (A) 1,000 pounds
- (B) 2,000 short tons
- (C) 2,240 pounds
- (D) 500 short tons

If choice D is selected set score to 1.

37. Given the same water depth and mooring tension, the holding power of a 90 pound/foot chain mooring system in comparison to the holding power of a 19 pound/foot wire rope mooring line will be _____.

- (A) equal
- (B) indeterminable
- (C) weaker
- (D) greater

If choice D is selected set score to 1.

38. Each person on the rig has a designated area to proceed to in the event of a fire. This assignment is shown clearly on which of the following documents?

- (A) shipping articles
- (B) Certificate of Inspection
- (C) Muster List ("Station Bill")
- (D) fire fighting plan

If choice C is selected set score to 1.

39. While the COASTAL DRILLER is elevated, the out-of-level alarm indicates that hull inclination exceeds 0.3°. What should you do?

- (A) Raise the low corner.
- (B) Confirm operation of out-of-level alarm.
- (C) Raise the high corner.
- (D) Raise unit to proper air gap and inspect for damage.

If choice B is selected set score to 1.

40. An uncontrolled flow of gas, oil, or other well fluids into the atmosphere is called a _____.

- (A) kick
- (B) breakout
- (C) blowout
- (D) flow

If choice C is selected set score to 1.

41. What is the minimum concentration of H₂S which can cause death if a person is exposed for even an instant?

- (A) 200 ppm
- (B) 400 ppm
- (C) 600 ppm
- (D) 1000 ppm

If choice D is selected set score to 1.

42. The vertical height and density of the drilling fluid are used to determine the _____.

- (A) hydrostatic pressure of the drilling fluid
- (B) casing size
- (C) diameter of the well
- (D) presence of hydrogen sulfide gasses

If choice A is selected set score to 1.

43. The space around a pipe in a wellbore, the outer wall of which may be the wall of either the borehole or the casing, is the _____.

- (A) annulus
- (B) bore
- (C) down hole
- (D) open hole

If choice A is selected set score to 1.

44. What is a pinion in a jacking system?

- (A) Flexible coupling
- (B) Flexible shaft
- (C) Flexible joint
- (D) Gearwheel

If choice D is selected set score to 1.

45. The platform that supports the derrickman when tripping pipe is called the _____.

- (A) water table
- (B) monkey board
- (C) stabbing board
- (D) Texas deck

If choice B is selected set score to 1.

46. What does the term "head" mean when applied to a pump?

- (A) Height of its discharge pipe
- (B) Sum of discharge and suction pressures
- (C) Difference between the discharge and suction pressures
- (D) Length of its discharge pipe

If choice C is selected set score to 1.

47. Which statement concerning an accidental oil spill in the navigable waters of the U.S. is TRUE?

- (A) The person in charge must report the spill to the Coast Guard.
- (B) A warning broadcast must be made by radiotelephone.
- (C) The Department of Interior is responsible for the clean up of the spill.
- (D) The Corps of Engineers is responsible for the clean up of the spill.

If choice A is selected set score to 1.

48. Most minor spills of oil products are caused by _____.

- (A) equipment failure
- (B) major casualties
- (C) unforeseeable circumstances
- (D) human error

If choice D is selected set score to 1.

49. During oil transfer operations, who is responsible for ensuring that the posted transfer procedures are followed?

- (A) The tankerman
- (B) The oiler
- (C) The senior able seaman
- (D) The designated person in charge

If choice D is selected set score to 1.

50. The maximum draft to which a drilling unit may be safely loaded is called _____.

- (A) load line draft
- (B) deep draft
- (C) calculated draft
- (D) mean draft

If choice A is selected set score to 1.